Project Design Phase
Problem – Solution Fit Template

Date	10 February 2026
Team ID	LTVIP2026TMIDS87433
Project Name	Rain Prediction Pipeline Flask
Maximum Marks	2 Marks

Problem – Solution Fit

Problem–Solution Fit ensures that the identified problem of inaccurate and generalized rainfall forecasting is effectively addressed by a practical and user-focused technical solution. The Rain Prediction Pipeline aligns customer needs—such as accurate prediction, ease of use, and real-time results—with a machine learning–based web application that directly solves these challenges.

Purpose

- To address rainfall prediction challenges using a data-driven and user-centric approach.

- To improve adoption by providing a simple web interface aligned with user behavior.

- To enhance communication by clearly presenting prediction results in an understandable format.

- To build user trust through reliable and consistent prediction outputs.

- To analyze current limitations in weather forecasting systems and provide an improved predictive solution.

Problem–Solution fit Canvas
Rainfall Prediction Pipeline using Machine Learning and Flask

1. CUSTOMER SEGMENT(S) — CS
Who is your target customer?
- Farmers
- Event planners
- Travelers
- Local authorities
- Students learning ML

6. CUSTOMER CONSTRAINTS — CC
What prevents customers from taking action or finding a solution?
- Limited access to real-time data
- Limited technical knowledge
- Dependence on general forecasts
- No historical trend analysis

5. AVAILABLE SOLUTIONS — AS
How are they solving it today?
- Basic weather forecast apps
- TV weather reports
- Manual weather estimation

2. JOBS-TO-BE-DONE / PROBLEMS — J&P
What is the core problem (job) you'll solve for your
- Need to know if it will rain tomorrow
- Difficulty in making farming decisions
- Risk of event cancellation due to uncertain weather
- Lack of simple ML-based rainfall tools

9. PROBLEM ROOT CAUSE — RC
Why do customers have to deal with this job?
- Weather patterns are complex
- Traditional forecasts may lack localized prediction
- No simple ML-based rainfall prediction interface

7. PROBLEM ROOT CAUSE — RC
Weather patterns are complex
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3. TRIGGERS — TR
- Sudden weather changes
- Seasonal farming planning
- Outdoor event scheduling
- Need for academic ML projects implementation

4. AVAILABLE SOLUTIONS — AS
- Basic weather forecast apps
- TV weather reports
- Manual weather estimation
- Limitations:
- Not personalized,· Sometimes inaccurate
- No ML-based explanation

8. CHANNELS OF BEHAVIOUR — CH
Web applications
- Mobile browsers
- GitHub (for ML learners)

4. EMOTIONS: BEFORE / AFTER — EM
- Uncertainty
- Stress about weather
- Fear of crop damage
- Confusion due to inaccurate forecasts

5. EMOTIONS: BEFORE / AFTER — EM
- Better decision-making
- Increased confidence
- Reduced risk
- Clear prediction result

10. YOUR SOLUTION — SL
- Web-based rainfall prediction system
- Machine Learning model trained on historical weather data
- Flask-based application for real-time prediction
- User-friendly interface
- Clear output: Rain / No Rain

5. EMOTIONS: BEFORE / AFTER — EM
- Better decision-making
- Increased confidence
- Clear prediction result

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